The examiner objected to the abstract of the disclosure because the phrase "is disclosed" was used. A replacement abstract is provided above.

The examiner objected to the drawings because reference character "76" was use to designate both the front portion of the main frame and the rearward direction in FIG. 1. The specification is amended above to designate the front portion of the main frame by the reference character "77". A marked-up version of FIG. 1 showing the proposed change is attached (although not marked in red since this paper is submitted via facsimile).

Claims 1, 3-5, 7-10, 12, 13, and 16-18 were rejected by the examiner as being anticipated by Couse (2,789,647). Claims 2, 6, 11, 13, and 15 were rejected by the examiner under 35 USC §103(a) as being unpatentable over Couse in view of Hauser (4,362,208). Claims 1, 10, and 18 are canceled above. Claims 2 and 11 are amended to independent form and to better define the invention. Claims 3 through 9 now ultimately depend from claim 2, and claims 12 through 17 now ultimately depend from claim 11. As will be explained below, claims 2 through 17, as amended, distinguish over the prior art cited by the examiner and are considered in condition for allowance.

Independent claims 2 and 11 recite, among other features, that a cooling core of a radiator assembly is positioned relative to the longitudinal axis of the machine main frame such that (i) a linear extension of the upper edge of the cooling core defines a line L_1, (ii) a line L_2 is defined by a line which intersects the longitudinal axis so as to define a 90° angle α therebetween, and (iii) an angle σ is defined between said line L_1 and said line L_2, and (iv) $40.0° \leq \sigma \leq 95.0°$. This feature is clearly not taught or suggested by Couse, Hauser, or the combination of Couse with Hauser.

The upper edge of the auxiliary radiator 19 of Couse clearly extends along a line that intersects the longitudinal axis of the Couse frame members 2 at a 90° angle. This is particular apparent from FIG. 1, in which only the side of the radiator 19 is visible, whereas a portion of the front or rear of the radiator 19 would be visible if the angle of intersection were other than 90°.

The heat exchanger 1 of Hauser is also positioned so that a linear extension of its top edge intersects the longitudinal axis of the frame at a 90° angle. In FIGS. 1 and 2, for example, th heat exchang r 1 is clearly

positioned so that a linear extension of its top edge intersect the longitudinal axis of the frame at a 90° angle, although the heat exchanger 1 is tilted rearwardly (see FIG. 2). A similar 90° intersection is seen in FIG. 3. The embodiment of FIGS. 4 and 5 is similar to FIGS. 1 and 2, except that the heat exchanger 1 is tilted laterally inwardly in FIGS. 4 and 5. The linear extension of the top edge of the heat exchanger in FIGS. 4 and 5 is still at a 90° angle relative to the longitudinal axis of the machine frame (if it even intersects the axis). Referring now to FIGS. 6 and 7 of Hauser, the heat exchanger 1 is positioned such a linear extension of its top edge likewise does not intersect the longitudinal axis of the machine frame at an angle other than 90°. It is also useful to note that FIG. 6 is a rear view and FIG. 7 is a top view, so the arrangement of the heat exchange shown in FIG. 6 is clearly substantially different from and does not suggest the arrangement recited in claims 2 and 11.

Neither Couse nor Hauser teaches an arrangement as recited in claims 2 and 11, wherein an angle σ is defined between said line L_1 and said line L_2, and $40.0° \leq \sigma \leq 95.0$. Moreover, nothing in Couse or Hauser would suggest to one skilled in the art that using the claimed arrangement would be beneficial. Accordingly, the invention as recited in claims 2 and 11 would not have been obvious to one skilled in the art. In fact, one skilled in the art would not me motivated to modify Couse as suggested by the examiner because doing so would result in a drive mechanism for the Couse generator 12 position at an undesirable angle relative to the Couse drive shaft 17. Moreover, to so modify Couse as suggested by the examiner would provide no advantage in the Couse structure. Claims 2 and 11 distinguish over the prior art and are in condition for allowance.

Claims 2 through 9 depend from claim 2 and are allowable for at least the same reasons as claim 2. Claims 12 through 17 depend from claim 11 and are allowable for at least the same reasons as claim 11.

Claims 19 through 28 were rejected under 35 USC §103(a) as being unpatentable over Couse in view of Hauser. The applicant respectfully traverses this rejection.

Independent claim 19 recites a work machine comprising a frame

having a longitudinal axis and an operator cab mount d on the frame. An engine enclosure is mounted on the frame forward of the operator cab, and **the engine enclosure is devoid of a radiator assembly** (emphasis added). An engine assembly is mounted the frame and located within the engine assembly. The engine assembly includes and engine and a fan directing cooling air over the engine. A radiator assembly is mounted to the frame rearward of the operator cab and includes a cooling core having an upper edge. **The cooling core is positioned such that a linear extension of the upper edge extends along a line that intersects the longitudinal axis of the frame at an angle other than 90°**(emphasis added).

The examiner contends that the combination of Couse with Hauser teaches the limitations of claim 19. However, the combination of Couse with Hauser does not teach or even suggest several limitations present in claim 19. For example, both Couse and Hauser teach the use of a radiator assembly located in the engine enclosure, whereas claim 19 clearly recites that the engine enclosure is devoid of a radiator assembly. Couse teaches the use of main radiator 8 located in the engine enclosure (see FIG. 1). Similar, Hauser states at column 4, line 13, that "The internal combustion engine is associated with a cooling system which consists essentially of a heat exchanger located inside the engine compartment and not shown...". (see also claim 1 of Hauser). Nothing in Couse or Hauser would suggest to one skilled in the art to provide an engine enclosure devoid of a radiator, as recited in claim 19, since Couse and Hauser specifically teach away from the claimed arrangement. For this reason alone, nothing in the combination of Couse with Hauser teaches or suggests the invention recited in claim 19.

Independent claim 19 also recites that the radiator assembly has a cooling core positioned such that a linear extension of its upper edge extends along a line that intersects the longitudinal axis of the frame at an angle other than 90°. This is clearly not taught or suggested by Couse, Hauser, or the combination of Couse and Hauser. The upper edge of the auxiliary radiator 19 of Couse clearly extends along a line that intersects the longitudinal axis of th Couse frame members 2 at a 90° angle This is particular apparent from FIG. 1, in which only the side of th radiator 19 is visible, wh reas a portion of

the front or rear of the radiator 19 would be visible if the angl of intersection were other than 90°.

The heat exchanger 1 of Hauser is also positioned so that a linear extension of its top edge intersects the longitudinal axis of the frame at a 90° angle. In FIGS. 1 and 2, for example, the heat exchanger 1 is clearly positioned so that a linear extension of its top edge at best intersect the longitudinal axis of the frame at a 90° angle, although the heat exchanger is tilted rearwardly (see FIG. 2). A similar 90° intersection is seen in FIG. 3 The embodiment of FIGS. 4 and 5 are similar to FIGS. 1 and 2, except that the heat exchanger is tilted laterally inwardly in FIGS. 4 and 5. The linear extension of the top edge of the heat exchanger in FIGS. 4 and 5 still does not intersect the longitudinal axis of the frame at an angle other than 90°. Referring now to FIGS. 6 and 7 of Hauser, the heat exchanger 1 is positioned such a linear extension of its top edge likewise does not intersect the longitudinal axis of the machine frame at an angle other than 90°. Again, it is useful to note that FIG. 6 is a rear view and FIG. 7 is a top view, so the angled heat exchanger 1 in FIG. 6 is oriented substantially different that the arrangement recited in claim 19.

Neither Couse nor Hauser nor the combination of Couse and Hauser teaches or even suggests a work machine as recited in claim 1 wherein a linear extension of a top edge of a radiator cooling core intersects the longitudinal axis of the machine frame at an angle other than 90°. Therefore, for this additional reason, the examiner's rejection of claim 19 is improper and should be withdrawn.

Claims 20 through 23 depend from claim 19 and are considered allowable for the same reasons as claim 19. Moreover, claims 20 through 23 recite additional features not taught or suggested by the prior art.

Independent claim 24 recites a work machine comprising a frame, an operator cab mounted on the frame, and an engine enclosure mounted on the frame forward of the operator cab. The engine enclosure includes an upper surface extending downwardly and forwardly from the operator cab, and the upper surface terminates at a first end positioned at a first distance above the frame. An ngin ass mbly is mounted on the frame and located within th

engine enclosure. A radiator ass mbly is mounted to the frame rearwardly of the operator cab and includes a cooling core having an upper edge positioned a second distance above the frame. This second distance is greater than the first distance.

The examiner argues that all of the features of claim 24 are taught by the combination of Couse and Hauser and further that "the vertical distances between the front hood and the frame relative to the vertical distance between the upper edge of the radiator and the frame do not appear to be critical to the function of the invention and therefore are viewed as a matter of design choice". The quoted argument by examiner is a clear admission that the features of claim 24 are not taught by the combination of Couse and Hauser, and as explained before, the referenced feature of claim 24 is critical to the function of the invention and not a matter of design choice.

As explained in the specification, a goal of this invention (as recited in claim 24) is to allow increased radiator size to meet increased cooling demands resulting from engine emission control devices, but without negatively effecting operator visibility from the machine cab. The invention of claim 24 achieves this goal by positioning the radiator assembly rearwardly of the cab and allowing the top edge of the radiator assembly to extend above the frame a relatively larger distance. This then permits no radiator assembly or a small radiator assembly in the engine enclosure, thus permitting the use of an engine enclosure top surface having a forward end positioned at a relatively smaller distance above the frame, thereby allowing good forward visibility for the machine operator without compromising cooling capacity and, if needed, permitting improved cooling capacity. Clearly, the relative spacing of the top of the radiator and the top of the forward end of the engine enclosure top surface above the machine frame is critical to the function of the invention and is not a matter of design choice.

Because the combination of Couse and Hauser does not teach the invention as recited in claims 24 and the feature discussed above is critical to the invention and not a matter of design choice, the examiner's rejection of claim 24 is improper and should be withdrawn. Claims 25 through 28 depend from claim 24 ar considered allowable for the at least th same reasons as claim 24. Moreover, claims 25 through 28 recite furth r featur s that are not

taught or suggested by the prior art.

In view of the forgoing remarks and amendments, this application is considered in condition for allowance. Favorable action is solicited.

Respectfully submitted,

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Copy of Amended Paragraphs and Claims Showing Changes

IN THE SPECIFICATION

On Page 6, please replace the paragraph beginning at line 19 with the following:

As shown in FIG. 1, work implement 28 is mechanically coupled to main frame 12 such that radiator assembly 20 is interposed between work implement 28 and engine assembly 14. However, it should be understood that a work implement 28, such as an earth moving blade (not shown), can also be mechanically coupled to a front portion [76] 77 of main frame 12 so that engine assembly 14 is interposed between work implement 28 and radiator assembly 20.

On page 18, please cancel the original abstract and substitute following:

The addition of emission control devices to engines of work machines has increased the cooling demands placed on the engine cooling system. This increased cooling demand can lead to the use of larger engine heat exchangers, thus requiring larger engine enclosures that may restrict the visibility of the machine operator. In accordance with one aspect of this invention, the engine enclosure of a work machine is devoid of an heat exchanger. An engine heat exchanger is mounted to a machine frame rearward of an operator cab and positioned so that an upper edge of the heat exchanger cooling core extends along a line that intersects the longitudinal axis of the machine frame at an angle other than 90°. This arrangement permits the use of a larger heat exchanger without substantially obstructing the view of the machine operator. [A work machine is disclosed. The work machine includes a main frame and an engine assembly mounted on the main frame. The work machine also includes a radiator assembly mounted on the main frame. The work machine further includes a cab assembly mounted on the mainframe such that the cab assembly is interposed between the engine assembly and the radiator ass mbly. The work machine also

includes (i) a work implement coupled to the main frame and (ii) a ground engaging mechanism mechanically coupled to the engin assembly, wherein actuation of the ground engaging mechanism by the engine assembly causes the work machine to be advanced over a ground segment.]

IN THE CLAIMS

2. (amended) [The work machine of claim 1, wherein:] A work machine, comprising:

a main frame;

an engine assembly mounted on said main frame;

a radiator assembly mounted on said main frame; and

a transmission assembly (i) mechanically coupled to said engine assembly and (ii) mounted on said main frame such that said transmission assembly is interposed between said engine assembly and said radiator assembly;

said main frame has a longitudinal axis[,];

said radiator assembly includes as cooling core having an upper edge[,];

said cooling core is positioned relative to said longitudinal axis such that (i) a linear extension of said upper edge defines a line L_1, (ii) a line L_2 is defined by a lined which intersects said longitudinal axis so as to define a 90° angle α therebetween, and (iii) an angle σ is defined between said line L_1 and said line L_2, and (iv) $40.0° \leq \sigma \leq 95.0°$.

3. (amended) The work machine of claim [1] 2, further comprising a cab assembly mounted on the main frame, wherein [:] said cab assembly is interposed between said engine assembly and said radiator assembly.

4. (twice amended) The work machine of claim [1] 2, further comprising:

a work implement coupled to said main frame; and

said radiator assembly is interposed between said work implement and said engine assembly.

6. (twice amended) The work machine of claim [1] 2, wh rein:

said radiator assembly include (i) a radiator fan and (ii) a cooling core; and

said cooling core is interposed between said radiator fan and said engine assembly.

8. (amended) The work machine of claim [1] 2, further comprising:

a conduit having (i) a first end attached to said engine assembly, (ii) a second end attached to said radiator assembly, and (iii) said engine assembly is in fluid communication with said radiator assembly; and

a cooling fluid which is advanced from said radiator assembly to said engine assembly through said conduit.

9. (twice amended) The work machine of claim [1] 2, further comprising:

a ground engaging mechanism mechanically coupled to said engine assembly; and

wherein actuation of said ground engaging mechanism by said engine causes said work machine to be advanced over a ground segment.

11. (amended) [The work machine of claim 10, wherein:] A work machine, comprising:

a main frame;

an engine assembly mounted on said main frame;

a radiator assembly mounted on said main frame; and

a cab assembly mounted on said main frame such that said cab assembly is interposed between said engine assembly and said radiator assembly;

said main frame having a longitudinal axis[,];

said radiator assembly includes a cooling core having an upper edge[,]; and

said cooling core is positioned relative to said longitudinal axis such that (i) a linear extension of said upper edge defines a line L_1, (ii) a line L_2 is defined by a lined which intersects said longitudinal axis so as to define a 90° angle α therebetween, and (iii) an angle σ is defined between said line L_1 and said line L_2, and (iv) $40.0° \leq \sigma \leq 95.0°$.

12. (twice amended) The work machine of claim [10] 11, further

comprising:

a work implement coupled to said main frame; and

said radiator assembly is interposed between said work implement and said cab assembly.

14. (twice amended) The work machine of claim [10] 11, wherein:

said radiator assembly includes (i) a radiator fan and (ii) a cooling core; and

said cooling core is interposed between said radiator fan and said cab assembly.

16. (amended) The work machine of claim [10] 11, further comprising:

a conduit having (i) a first end attached to said engine assembly, (ii) a second end attached to said radiator assembly, and (iii) said engine assembly is in fluid communication with said radiator assembly; and

a cooling fluid which is advanced from said radiator assembly to said engine assembly through said conduit.

17. (twice amended) The work machine of claim [10] 11, further comprising:

a ground engaging mechanism mechanically coupled to said engine assembly; and

wherein actuation of said ground engaging mechanism by said engine causes said work machine to be advanced over a ground segment.

Approved
12/30/02

Proposed Drawing Change

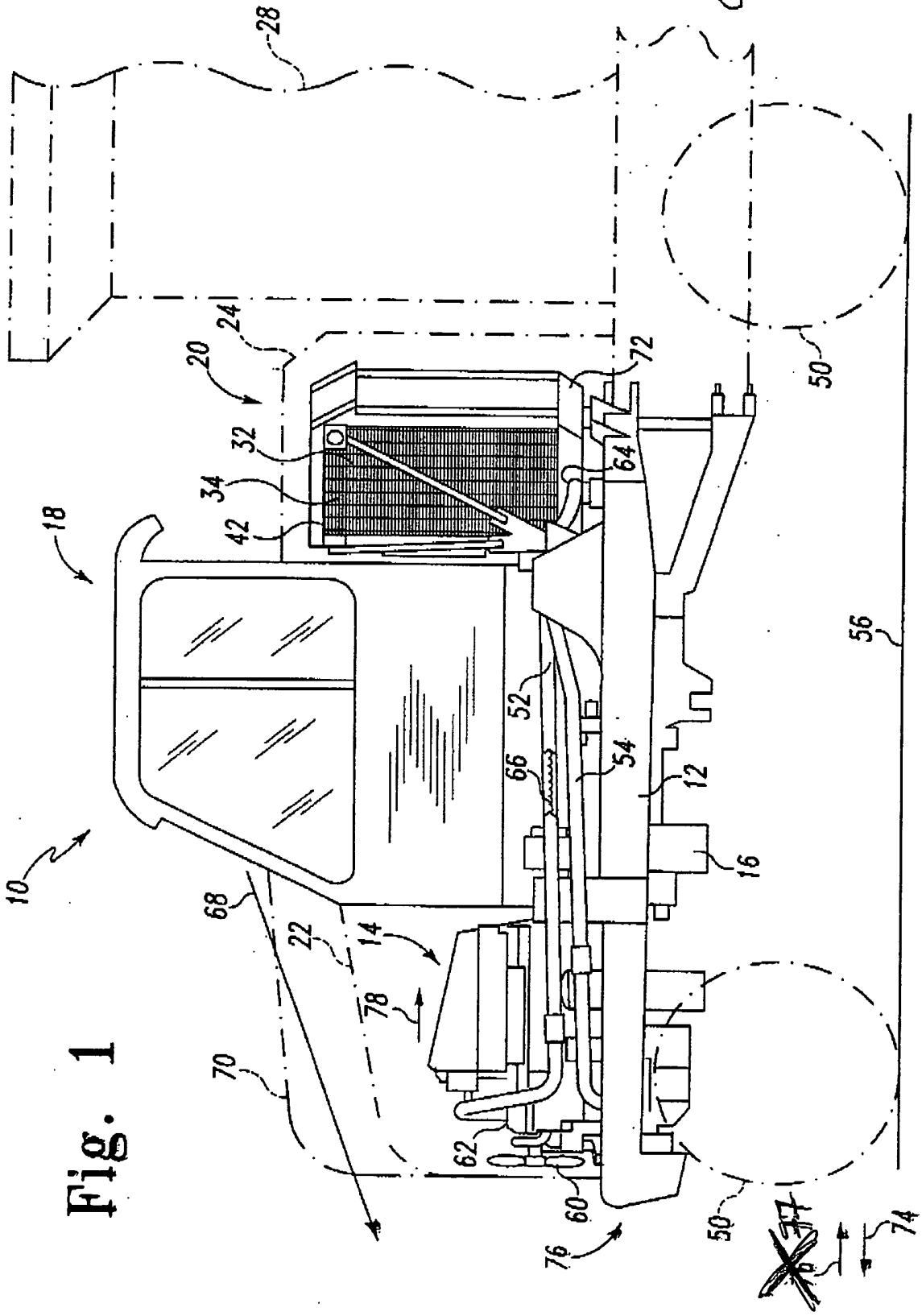

Fig. 1